Polaroid

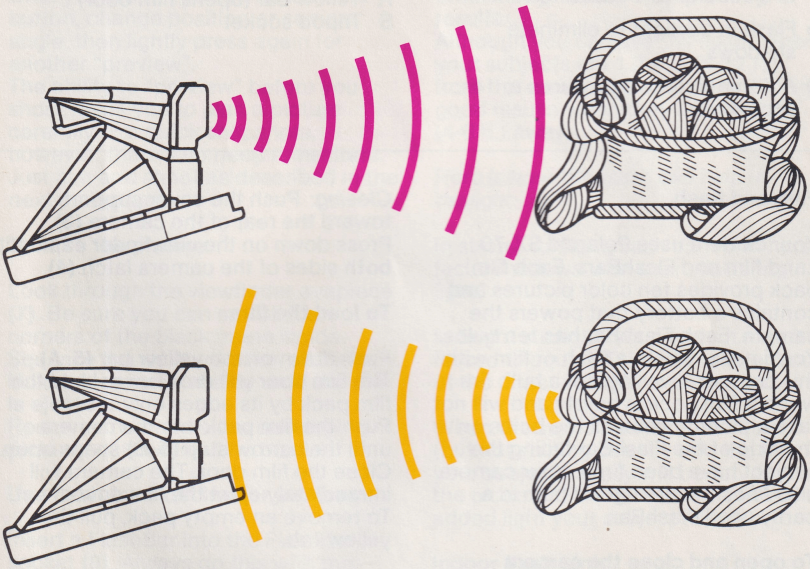
Polaroid introduces sonar focusing – the ultimate in one-step photography.

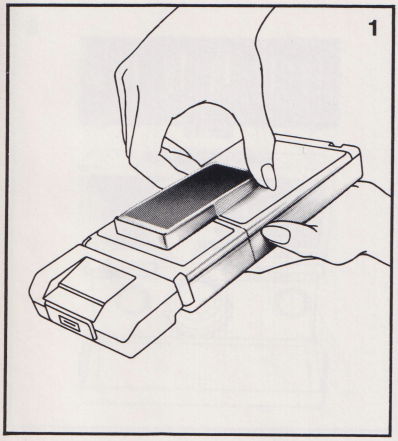
The instant you see your picture, just aim and shoot. With sonar focusing, the camera sets the lens instantly, automatically.

How sonar focusing works

As you begin to press the shutter button, your camera releases sound waves to the central part of the scene. The frequencies are far beyond our range of hearing and travel at the speed of sound.

The split second it takes for the sound to reach your subject and the echo to return is fed into a tiny electronic computer inside the camera.
The computer uses this time measurement to calculate the distance between the camera lens and your subject, then signals a motor to turn the lens until your subject is in sharp focus.
This extraordinary chain of events takes place in less than 1/3 of a second.

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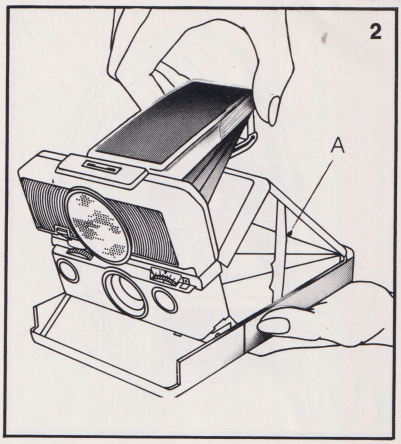
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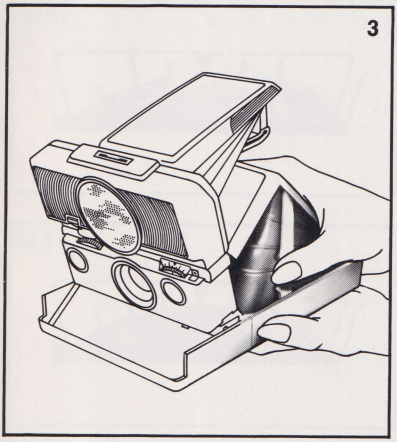
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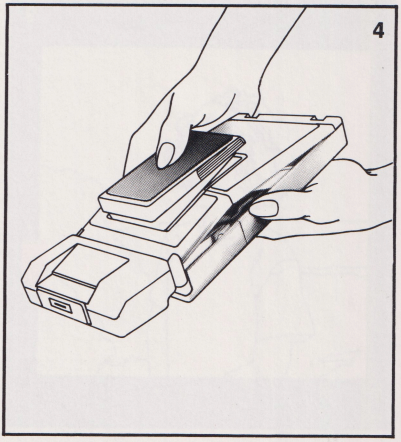
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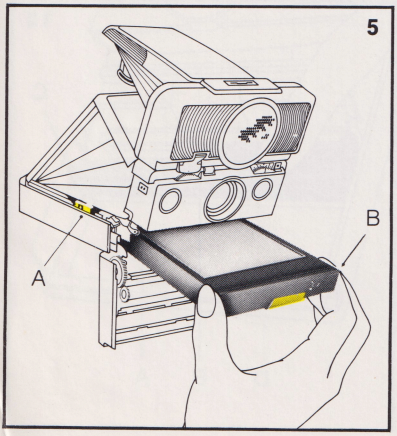
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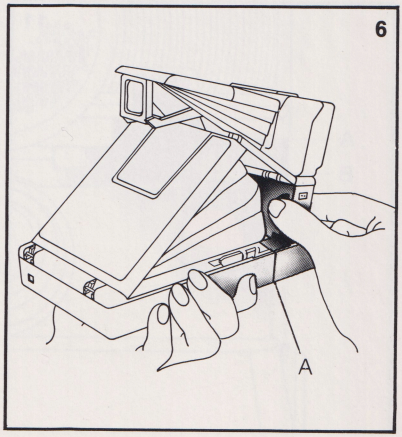
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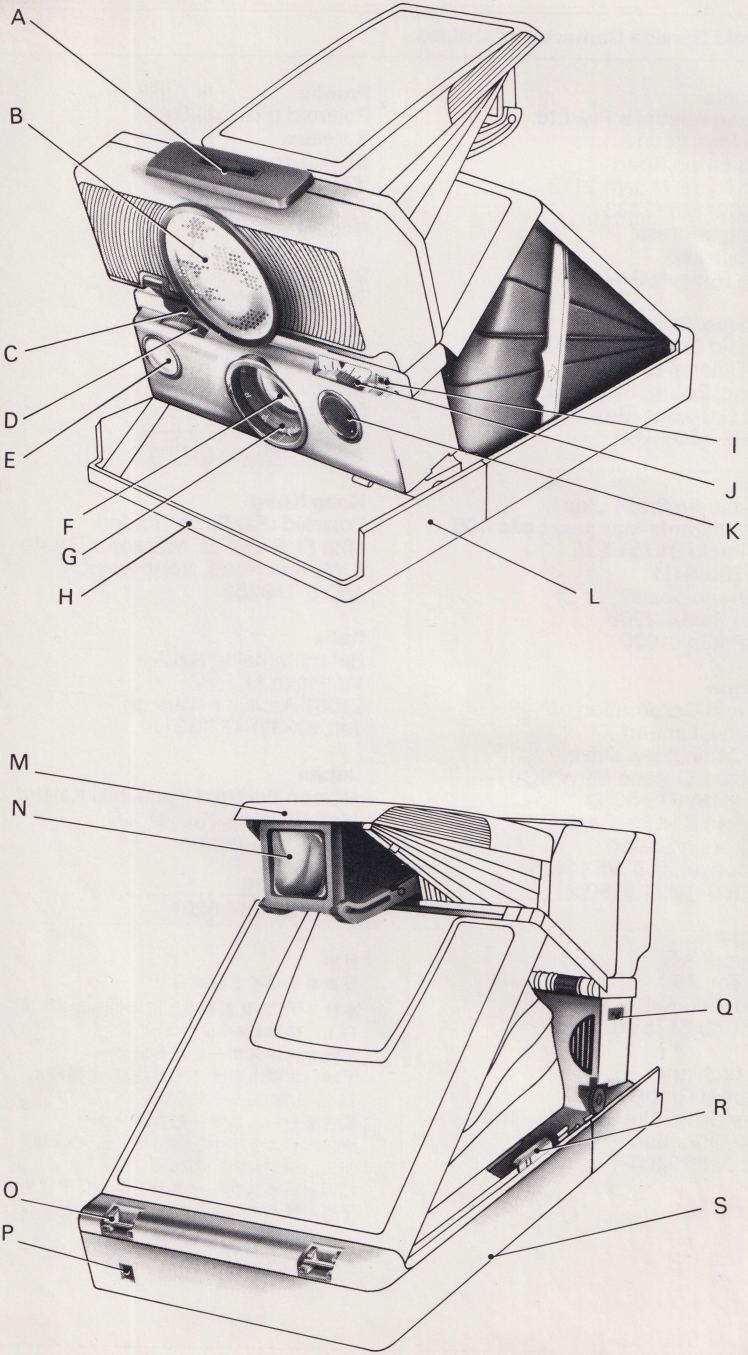
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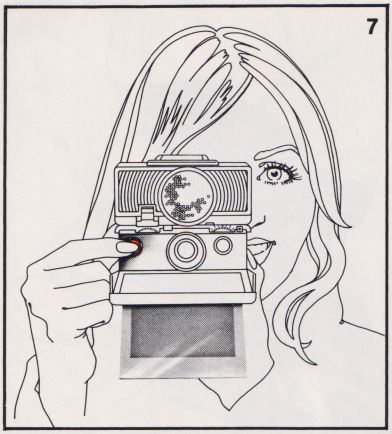
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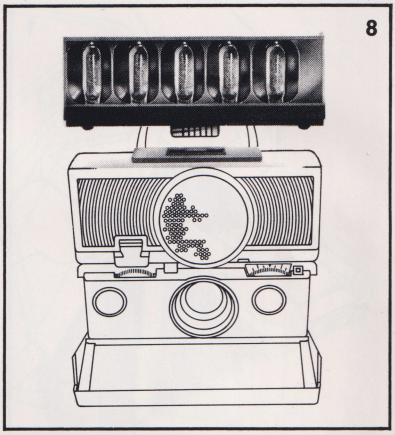
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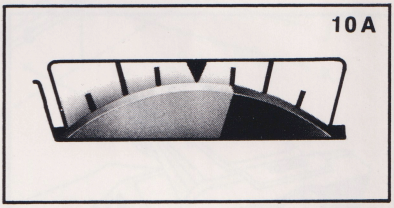
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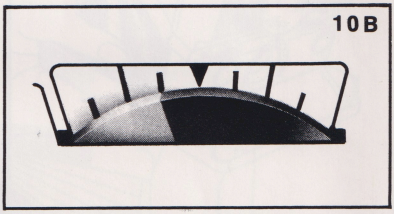
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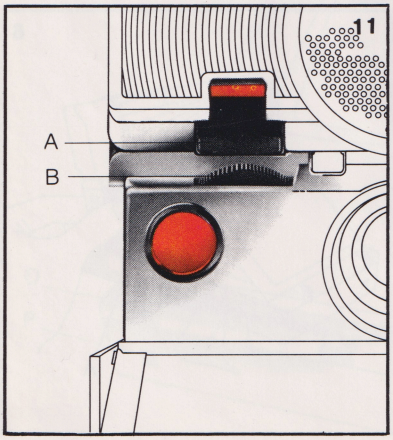
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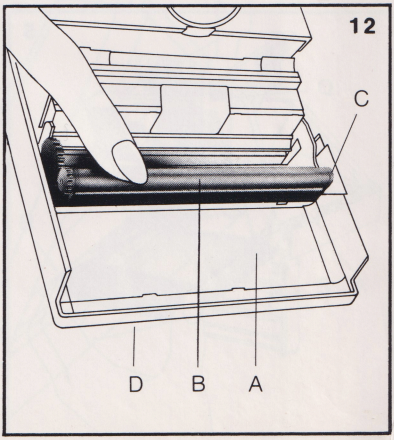
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Features

New with sonar focusing:

- Automatic and precise focusing in any light, even total darkness.
- "Preview" feature.
- Built-in "use flash or tripod" indicator.

Standard with SX-70:

- Through-the-lens viewing.
- Automatic exposure control for daylight and flash pictures.
- Pictures from 26 cm (10.4 in.) to infinity (flash to 6 m / 20 ft.).
- Can shoot as fast as every 1.5 seconds.
- 4-element, 116 mm, precision glass lens.
- Variable aperture from f/8 to f/74.
- Variable shutter speed from 1/180 of a second to 14 seconds.
- Flash in daylight to eliminate shadows.
- Automatic time exposures to 14 seconds.

Camera parts

A Flash Bar socket
B Transducer (sends the sound waves and receives the echo)
C Manual focus switch
D Manual focus wheel
E Shutter button
F Lens (4-element, 116 mm, f/8)
G Distance scale
H Picture exit slot
I Sensor (for the "use flash or tripod" indicator inside the viewfinder)
J Lighten/Darken control
K Electric eye
L Film door
M Viewfinder cap
N Viewfinder eyepiece
O Neckstrap connectors
P Picture counter (goes to 10 when you load a new or partly used film pack into the camera; counts down to show how many pictures are left)
Q Remote shutter button connector
R Yellow bar (opens film door)
S Tripod socket

Film and flash

Your camera uses Polaroid SX-70 Land film and FlashBars. Each film pack provides ten color pictures and contains a battery that powers the camera. Each FlashBar has ten bulbs. You'll never waste a flash or film with this camera. It will not let a bulb fire when a film pack is empty and will not take a picture when all the bulbs on the side of the FlashBar facing the subject have been fired. Your camera also finds the next good bulb in a partly used FlashBar.

To open and close the camera

Opening: Hold the camera in the palm of your hand **(1)**. Lift the thin end of the viewfinder cap and pull it straight up until the cover support **(2, A)** locks.

Closing: Push the cover support toward the rear of the camera **(3)**. Press down on the viewfinder cap until **both** sides of the camera latch **(4)**.

To load the film

Push down on the yellow bar **(5, A)**. The film door will drop open. Hold the film pack by its edges only.
Push the film pack into the camera until the narrow strip **(5, B)** snaps open. Close the film door. The camera will immediately eject the film cover.
To remove an empty pack, pull the yellow tab.

To hold the camera

Grip it firmly in the palm of your left hand, thumb and fingers behind the hinge **(6, A)**.
Place your right thumb on the semi-

circle, index finger on the shutter button, and curl the other fingers into your palm.

Never press the bellows or put your fingers in front of the picture exit slot.

How sonar focusing lets you "preview" the picture

To familiarize yourself with sonar focusing and "previewing", stand a few feet from your subject. Then look through the viewfinder. Notice that the scene appears unsharp.
Lightly press the shutter button partway and hold it there. You'll hear a brief whirring sound as the lens brings your subject into sharp view. (If film is ejected, you pressed too hard and accidentally took a picture.)
What you now see in the viewfinder is a "preview" of what the finished picture will look like. If it isn't exactly what you want, you can release the button, change position or camera angle, then lightly press again for another "preview".
The ability to "preview" before you shoot helps you to plan a picture carefully. For quick snapshots, however, there's no need to hesitate. Just aim and shoot as described in the next paragraph.

To take the picture

Look through the viewfinder eyepiece **(7)**. Be sure you can see all four corners of the black frame inside.
Squeeze the shutter button all the way. **Hold the camera steady until the film is ejected.**
Remove and handle the developing picture by its wide white border.

Use flash for most indoor pictures

Insert a FlashBar into the FlashBar socket **(8)**. Always do this with the camera pointing away from you.
You can take flash pictures of subjects 26 cm - 6 m (10.4 in. - 20 ft.) from the camera (no more, no less).
You'll get particularly good flash pictures of people when they are 1.2-2 m (4-6 feet) away and near a colorful background.

Flash pictures should not be taken where the atmosphere contains gases or dust that may be ignited by a spark.

The "use flash or tripod" indicator

When you are not using flash, a red light may appear in the right side of the viewfinder as you begin to press the shutter button **(9)**.
It warns that the lighting on the scene is not bright enough for picture taking without a tripod or other firm support. Release the shutter button. Use flash or place the camera on a tripod for a time exposure.

You can use flash in daylight

This feature, called "fill-flash" can correct lighting situations that might otherwise produce disappointing results.
Although you can use "fill-flash" when your subjects are 1.2-4 m (4-12 ft.) from the camera, you'll get particularly good results when they are 1.2-2 m (4-6 ft.) away.

Here is how "fill-flash" can help in daylight:

In strong sunlight, flash can fill in harsh facial shadows with even, flattering light.

In bright sunlight, your subject may be forced to squint. Take your subject out of the direct sunlight and use flash.

When the sun is behind your subject (but not shining directly into the lens) your subject usually will be too dark in the picture. "Fill-flash" can provide the added light your subject needs.

Indoor flash hints

Watch the background: To assure that it will be well lit by the flash, the background should be colorful and near your subject.
When the background is dark, or

beyond the flash range, it will be too dark in the picture.

To avoid a flash reflection: When shooting toward a reflective object or background (mirror, window, eyeglasses, etc.), stand to one side of your subject and shoot from an angle to avoid a flash reflection in the picture.
However, when the reflective surface is smooth and flat and is the central part of your main subject (glass-enclosed art, wall hanging, etc.), shooting at an angle may cause the sound waves to reflect away from the camera. If this happens, the lens will be set incorrectly and your picture will be unsharp.
To avoid this, you can set the lens manually (see **To set the lens manually**).

Arrange groups carefully: All the people in a group should be about the same distance from the camera. Then everyone will be lit evenly by the flash.

Daylight picture hints

- In bright sunlight stand so the sun is behind you or to the side.
- Move in close. You'll get particularly good results when your subject is about 1.2-1.5 m (4-5 feet) from the camera.
- Bright sunlit days are especially suitable for action pictures. Your camera's shutter will work at top speed, stopping all but extremely fast action. For best results, have your subjects move toward you rather than across the picture.
- Watch the background. It should complement your subjects, not distract from them. Keep it simple.

Close-ups

Your camera allows you to take pictures from as close as 26 cm (10.4 in.) without the use of accessories. At that distance the picture will show the subject at half its actual size. For close-ups of pets, children, etc., look through the viewfinder and as you move in close, **lightly** press the shutter button partway several times to "preview" the picture at various distances. When you see the picture you want, just press the button all the way.
To take a picture at the closest possible distance, look through the viewfinder and come closer to your subject than 26 cm (10.4 in.). **Lightly** press the shutter button partway and hold it there. You'll hear the camera set the lens.
Move the camera back and forth until your subject is as sharp and clear as possible. Press the button all the way to take the picture.
To avoid possible discomfort from the flash, extreme close-ups of people should be made in natural light rather than with flash.

Time exposures

Your camera can make automatic time exposures up to 14 seconds. Keep the camera steady by placing it on a firm support – a tripod is best – and use the Polaroid Remote Shutter Button. To take the picture, press the shutter button for at least a second.
For best results indoors, stand so bright lights are behind you or to the side.

Tips on outdoor lighting

Outdoors, your camera's electric eye controls the lens opening and shutter speed to let just the right amount of light reach the film.
The electric eye works best when the scene is evenly lit. It can be "fooled" by uneven lighting as described below.

Bright backgrounds: When a bright background is a large part of the scene and reflects more light than your subject, the electric eye sets the camera for the background, causing your subject to appear too dark in the picture.

In this situation, either

- move closer to your subject to reduce the effect of the background; or,
- turn the Lighten/Darken control toward Lighten **(10, A)** to lighten your subject.

Dark backgrounds: When a dark background is a large part of the scene and reflects less light than your subject, the electric eye will again set the camera for the background. Now, your subject may appear too light. This time, either move closer to your subject or set the Lighten/Darken control toward Darken **(10, B)** to darken your subject.

To set the lens manually

A few special situations call for setting the lens manually:

- When shooting straight-on through glass, it will block the sound waves from reaching your subject. The lens will focus on the glass and your picture will be unsharp. Screens or bars could cause the same result.
- When shooting at an angle toward a flat, smooth surface (glass-enclosed art, wall hanging, etc.), the sound waves may reflect away from the camera, causing the lens to set incorrectly. Before shooting in these situations, **lightly** squeeze the shutter button partway and hold it there. If your subject appears unsharp in the viewfinder, set the lens manually.

To set the lens manually: Press the bottom of the manual focus switch **(11, A)**. Then use the manual focus wheel **(11, B)** as described below. The red bar on top of the switch signals that you've disconnected the sonar focusing system. To reactivate it, press the top of the switch or close the camera. The lens will reset itself for sonar focusing.

To use the focus wheel: Look at the most important part of the scene. Roll the focus wheel back and forth until your subject looks as sharp and clear as possible. You can check your ability to focus accurately by comparing the setting on the distance scale around the lens with the actual camera-to-subject distance.

Picture problems and their solutions

Repeated spots: If a repeated spot or bar pattern appears on the picture, the rollers inside the camera need cleaning.
It's best to check the rollers each time you load film.

To clean the rollers: In dim light, open the film door and depress the light shield **(12, A)**. Rotate the rollers **(12, B)**. Remove any specks of dirt with a clean, lint-free cloth, moistened with water if needed. Check the raised ends **(12, C)** on the top roller; dirt can collect there too.
Should you need to clean the picture exit slot **(12, D)**, insert a stiff piece of paper (like the film cover) in front of the rollers and under the light shield. Push, until it comes out of the picture exit slot.

Part of the picture is missing: This happens when you damage the film by squeezing the pack above and below the yellow tab. As you load the camera, remember to hold the film pack by its edges.

Part of the picture is fogged: If you press against the bellows while taking a picture, you may block the movement of parts inside the camera. The next picture you take could be partially or totally white or could have streaky light patterns.

Causes of fuzzy pictures

- *Moving the camera during picture taking.* Hold the camera steady until the film is ejected from the camera.

- *Taking a picture in dim light.* When the red light appears in the right side of the viewfinder, remember to use flash or a tripod.
- *Shooting through glass.* The glass will block the sound waves from reaching your subject and the lens will focus on the glass. Set the lens manually.
- *The sound waves striking a foreground object and not reaching your subject.* As you press the shutter button, the sound waves travel to the central part of the scene. Be sure they have a clear path to your subject.
- *Shooting at an angle toward a smooth, flat surface.* The sound waves will reflect away from the camera. Set the lens manually.
- *Your subject moved during picture taking.* You'll get the best action pictures when your subject is moving toward you, rather than across the picture.

Camera problems and their solutions

If the camera does not eject the film cover or film:

- Check the picture counter. The film pack may be empty.
- The battery in your film pack may be weak or dead. Try a fresh pack. If the film cover doesn't come out of the second pack, the camera may need repair.
- If you press the shutter button for a flash picture and nothing happens, a FlashBar with five used bulbs facing the subject may be on your camera.
  Change the FlashBar. If the camera doesn't work when an **unused** side faces front, turn the FlashBar around or insert a new one. If it works then, it means one side of the FlashBar was defective. If you have any questions, please call Customer Service.
- If the camera sets the lens but the picture does not come out; or if the camera does not reset the lens past infinity (∞) when you release the shutter button, close the camera, then reopen it. The jam should clear.

If the camera stops during a cycle:
In rare cases, the camera may stop in the middle of an operating cycle. When this happens, you may not be able to close the camera fully. Never try to force it shut.
There are two reasons why the camera may stop. One is repeatedly pushing in the shutter button instead of holding it until the picture comes out. The remedy is simple – squeeze the button again and hold it. If the camera still doesn't complete its cycle, open the film door in dim light, pull the pack out about 2 cm (one inch), push it in again and close the door. The picture counter will reset to 10. The camera should complete its cycle, ejecting the top piece of film which will have been exposed.
The other reason is that the battery in the film pack is weak. Test this by inserting an empty pack if possible, or a new one.
If you insert a fresh pack, the film cover may be partly ejected, preventing the door from closing. Remove it and close the door. If you can close the door but the cover is ejected part way, open the door and remove the cover by turning the rollers forward. Never try to force the cover through the rollers without first opening the door.

Care of your system

The camera

Treat your camera with care. Rough handling may damage delicate parts. Keep the camera closed when not in use. The lens and viewfinder will seldom need cleaning. If they do, blow off any dust, then wipe them gently with a clean, lint-free cloth. From time to time clean the rollers inside the film door with a similar cloth, moistened with water if necessary.

The film

Polaroid SX-70 Land film, like all film, should be kept cool. If possible, store below 24°C (75°F). For longer storage, keep below 18°C (65°F). In its sealed

box, the film can be refrigerated (not frozen). Let it reach room temperature before using it. This will take at least an hour.
To preserve its freshness, keep the film sealed in its protective box until ready for use. Then, take the same care of a loaded camera as you do of your film. Keep the camera in a cool place (but not a refrigerator).

The pictures

When your developing SX-70 picture comes out of the camera, handle it by its wide white border. Don't bend, crush, or fold the picture. Don't cut the picture's borders, this can ruin the picture. The brilliant pictures made with your SX-70 system are among the most stable and resistant to fading ever known in photography.
Fingerprints on your pictures can be easily removed. Simply "mist" the surface with your breath, then lightly polish with a tissue or a soft clean cloth.

Electronic flash

Your camera was designed to use FlashBars and with a FlashBar it will produce well exposed pictures over the full flash range from about 25 cm to 6 m (10 in. to 20 ft.).
Because of the special electronic circuitry in your camera, an electronic flash unit must have matching electronic characteristics in order to give good picture results with this camera.
See your Polaroid Customer Service office for information on electronic flash units designed to work with your camera.
Electronic flash units other than those recommended by Customer Service will not give consistently good results and may cause your camera to malfunction.
There is a general rule that applies to any electronic flash unit. If you get poor picture results with it, try a FlashBar. If you get good pictures with a FlashBar, but not with electronic flash, the cause of the problem is the electronic flash, not the camera or the film.

To obtain information and help

If you are unable to get good pictures, review this instruction book.
Picture problems are often due to incorrect use of the camera. If you need further help, and before you return your camera for repair, please see your dealer or contact the nearest Polaroid office.
If you write, please explain the nature of the problem, and if possible, enclose sample pictures. Include your return address.

Accesssories

- Polaroid Remote Shutter Button No. 112
- Polaroid Tele 1.5 Lens No. 119A
- Polaroid Self-Timer No. 132
- Polaroid Carrying Case No. 2806
- Polaroid SX-70 Photo Album No. 129

Copies and enlargements

Beautiful copies and enlargements can be made from your favorite SX-70 pictures.
For copy service information, contact your dealer or the nearest Polaroid office.

Warranty

If this camera proves defective within **three years** of original purchase date, we will repair or, at our option, replace it free of charge. We will make no charge for labor, service or parts.
We will, when we return the camera, refund an amount approximately equal to what it cost you to mail it to us by insured parcel post, if the return address is within the country in which the Service Center is located.We will also supply one free pack of film. To take advantage of this warranty, the camera must be sent to and repaired by one of the Polaroid Service Centers. This warranty does not cover damage caused by accident or improper use, in which case repair will be made at a reasonable charge.
The above warranty and provisions do not affect your statutory rights.

Polaroid Service Centers and Offices

Mexico
Michelmex S.A.*
Apartado Postal #6-952
Mexico 6 D.F.
Tel.: 5761914

Nederland
Polaroid Nederland
Kantoor:
De Boelelaan 32
1083 HJ Amsterdam
Postbus 7949
1008 AC Amsterdam
Tel.: 020 - 46 2011
Klantenservice: 020 - 46 08 09
Reparaties:
Parallelweg 37b
7511 EE Enschede

New Zealand
Polaroid New Zealand Ltd.
Augustus House
15 Augustus Terrace
Parnell, Auckland 1
Tel.: 71-682
Mailing address:
P.O. Box 37-046
Parnell
Auckland 1

Norge
Polaroid (Norge) A/S
Industriveien 8B
Postboks 80
1473 Skårer
Tel.: (02) 70 4710

Österreich
Polaroid Ges.m.b.H.
Postfach 66
Eitnergasse 13
1233 Wien
Tel.: (0222) 86 43 44

Panama
Polaroid Interamerican, S.A.
P.O. Box 2167
Colon Free Zone
Tel.: 47-7285

Puerto Rico
Polaroid Caribbean Corporation
Charlyn Industrial Park
Road 190, Km 1.7
Carolina 00630
Tel.: (809) 768-1119
Mailing address:
Dirección postal:
P.O. Box 2032
Carolina 00630

Schweiz/Suisse/Svizzera
Polaroid A.G.
Hardturmstrasse 175
8037 Zürich
Tel.: (01) 44-72-72

Singapore
Polaroid Singapore (Pte) Ltd.
M-4 The Orchard
290 Orchard Road
Singapore 9
Tel.: (65) 235-9611
Mailing address:
Box 22
Pasir Panjang Post Office
Singapore 5

Sverige
Polaroid AB
Ekholmsvägen 34
Box 204
127 24 Skärholmen
Tel.: 08/7100850

U.S.A.
Polaroid Corporation
Office:
Cambridge, Mass., 02139
Tel.: (617) 864-4568
Repairs:
89 Second Avenue
Waltham, Mass. 02154
Tel.: (617) 890-1414

* Authorized Independent Repair Station

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